
Introduction of INR18650-30Q



SAMSUNG SDI

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Energy Business Division

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INR18650-30Q

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Specification

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Type		Spec.(Tentative)	Typical INR18650-30Q
Chemistry		NCA	NCA
Dimension (mm)	Diameter	18.33 ± 0.07	18.33 ± 0.07
	Height	64.85 ± 0.15	64.85 ± 0.15
Weight (g)		Max. 48.0	45.6
Initial IR (mΩ AC 1kHz)		≤ 18	13.13 ± 2
Initial IR (mΩ DC (10A-1A))		≤ 30	19.94 ± 2
Nominal Voltage (V)		3.60	3.61
Charge Method (100mA cut-off)		CC-CV (4.2±0.05V)	CC-CV (4.2±0.05V)
Charge Time	Standard (min), 0.5C	180min	134min
	Rapid (min), 4A	70min	68min
Charge Current	Standard current (A)	1.5	1.5
	Max. current (A)	4.0	4.0
Discharge	End voltage (V)	2.5	2.5
	Max. cont. current (A)	15	15
Rated discharge Capacity	Standard (mAh) (0.2C)	3,000	3,040
	rated (mAh) (10A)	2,700	2,983

Capacity _ 0.2C vs. 10A

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▪ 0.2C capacity

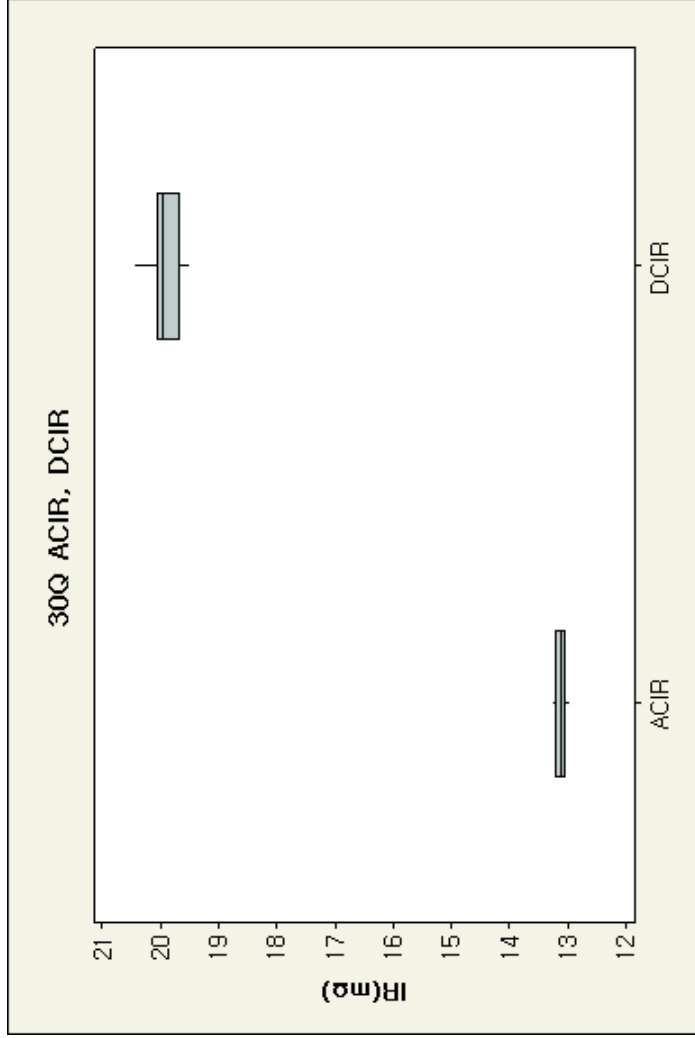
Cell	Capacity(Ah)	Energy(Wh)	Avg. volt(V)
1	3.041	11.0	3.61
2	3.043	11.0	3.61
3	3.035	11.0	3.61
Avg.	3.040	11.0	3.61

▪ 10A capacity

Cell	Capacity(Ah)	Energy(Wh)	Avg. volt(V)
1	2.978	10.1	3.38
2	2.992	10.1	3.39
3	2.980	10.1	3.39
Avg.	2.983	10.1	3.39

AC/DC Impedance

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AC-IR

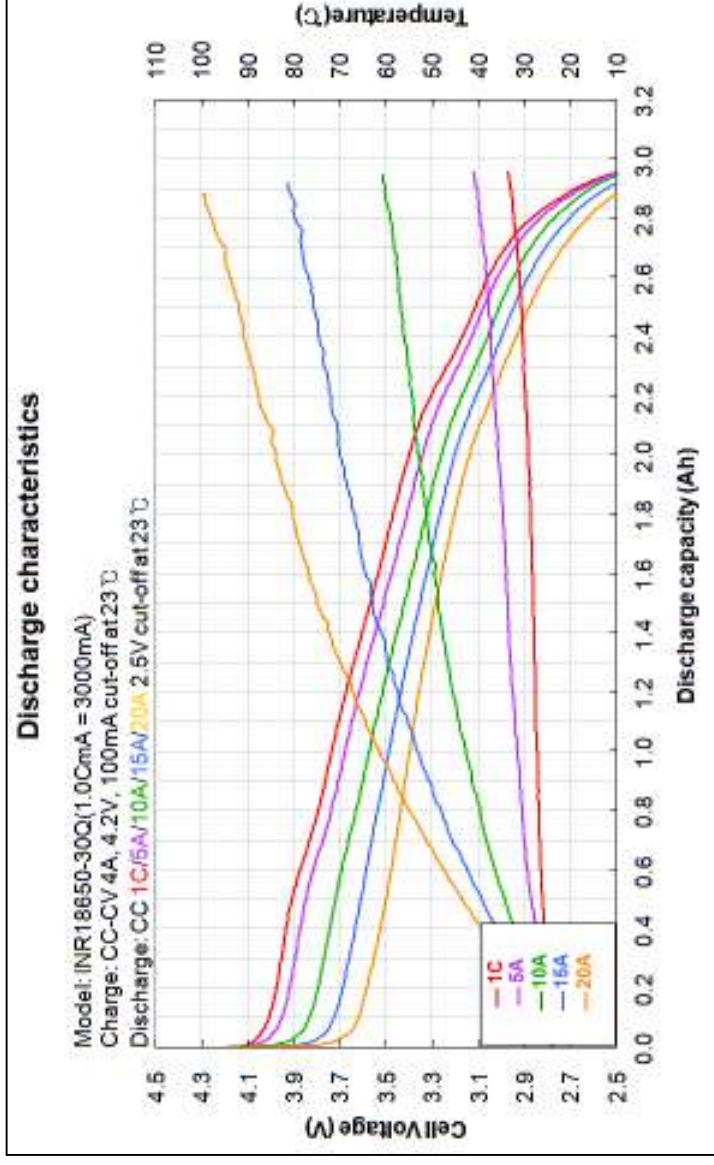
13.13 ± 2mΩ

DC-IR

19.94 ± 2mΩ

Capacity & Temperature vs. discharge capacity

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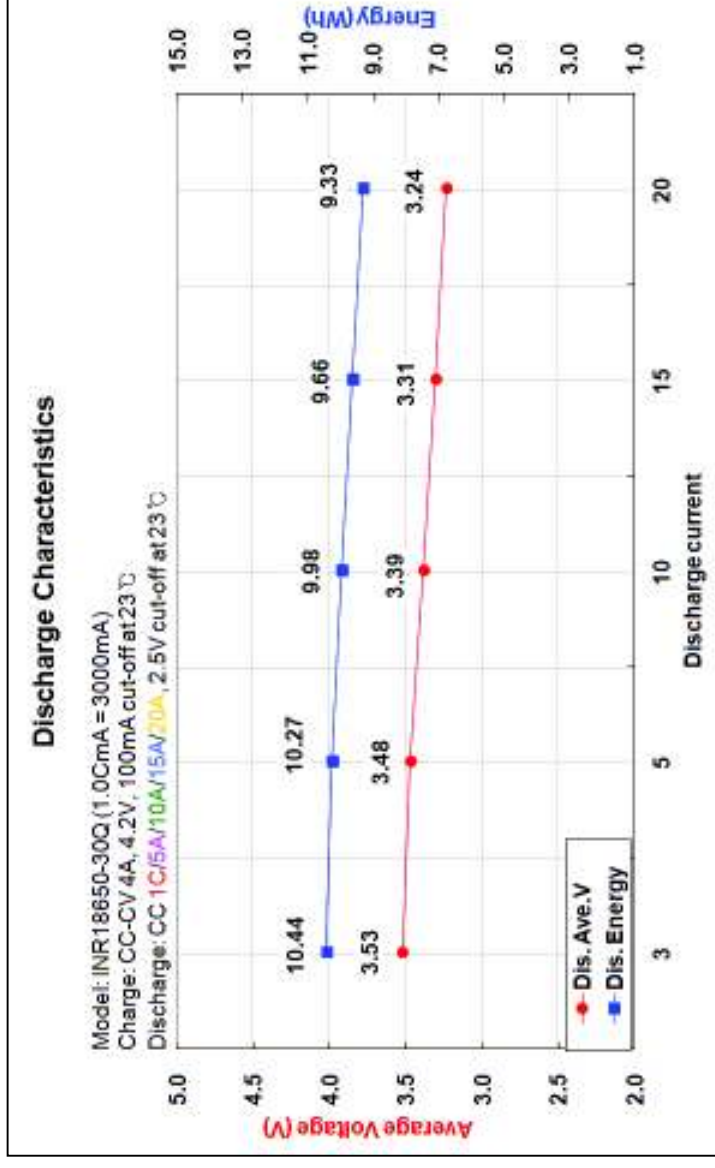


Discharge current

	1C	5A	10A	15A	20A
Capa.(Ah)	2.953	2.950	2.945	2.917	2.879
Temp.(°C)	33.7	41.0	60.9	81.2	99.4
Time(min.)	59.1	35.4	17.7	11.7	8.6

Energy & Avg. voltage at different current

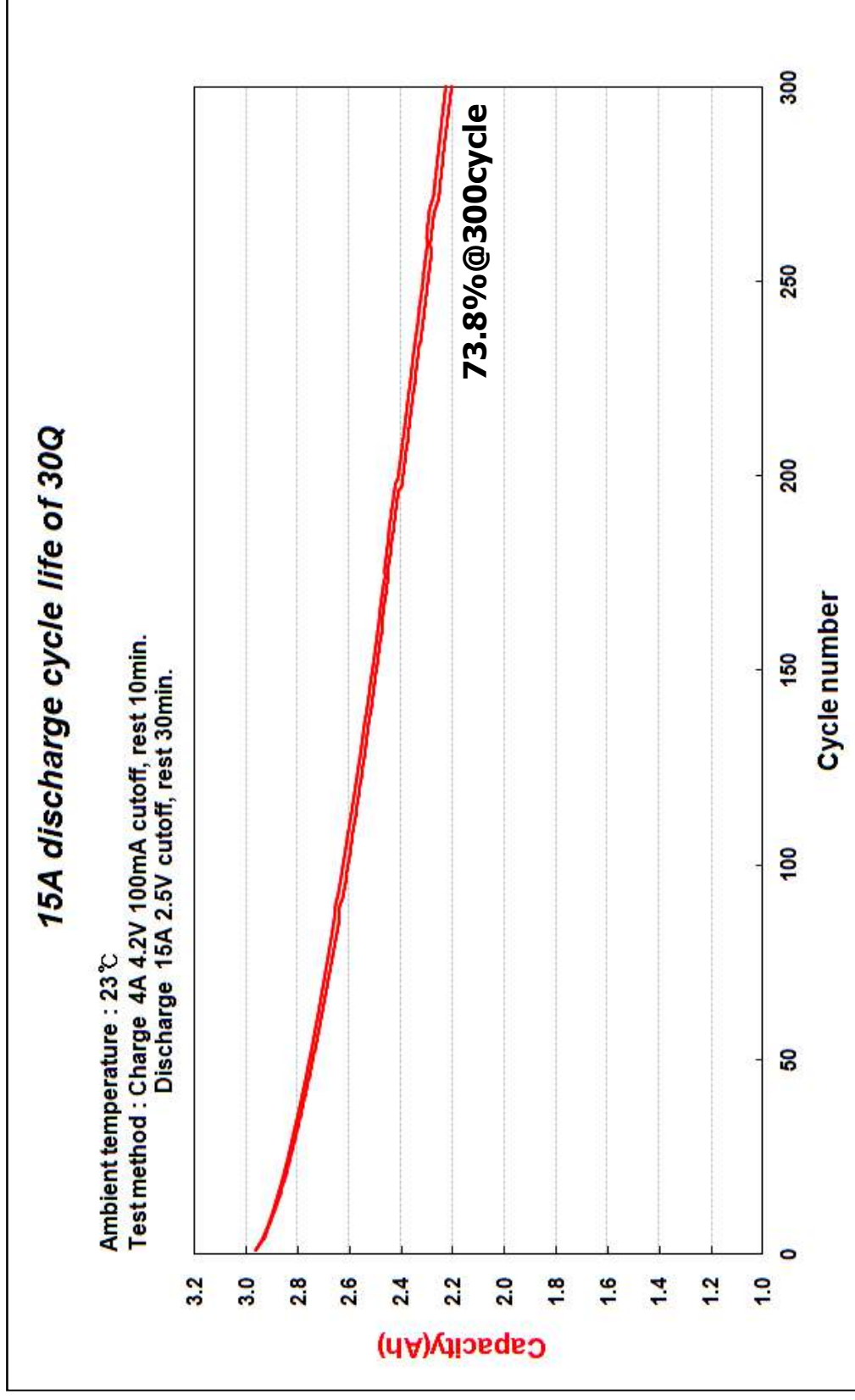
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Discharge current					
	1C	5A	10A	15A	20A
Energy(Wh)	10.44	10.27	9.98	9.66	9.33
Avg. voltage(V)	3.53	3.48	3.39	3.31	3.24

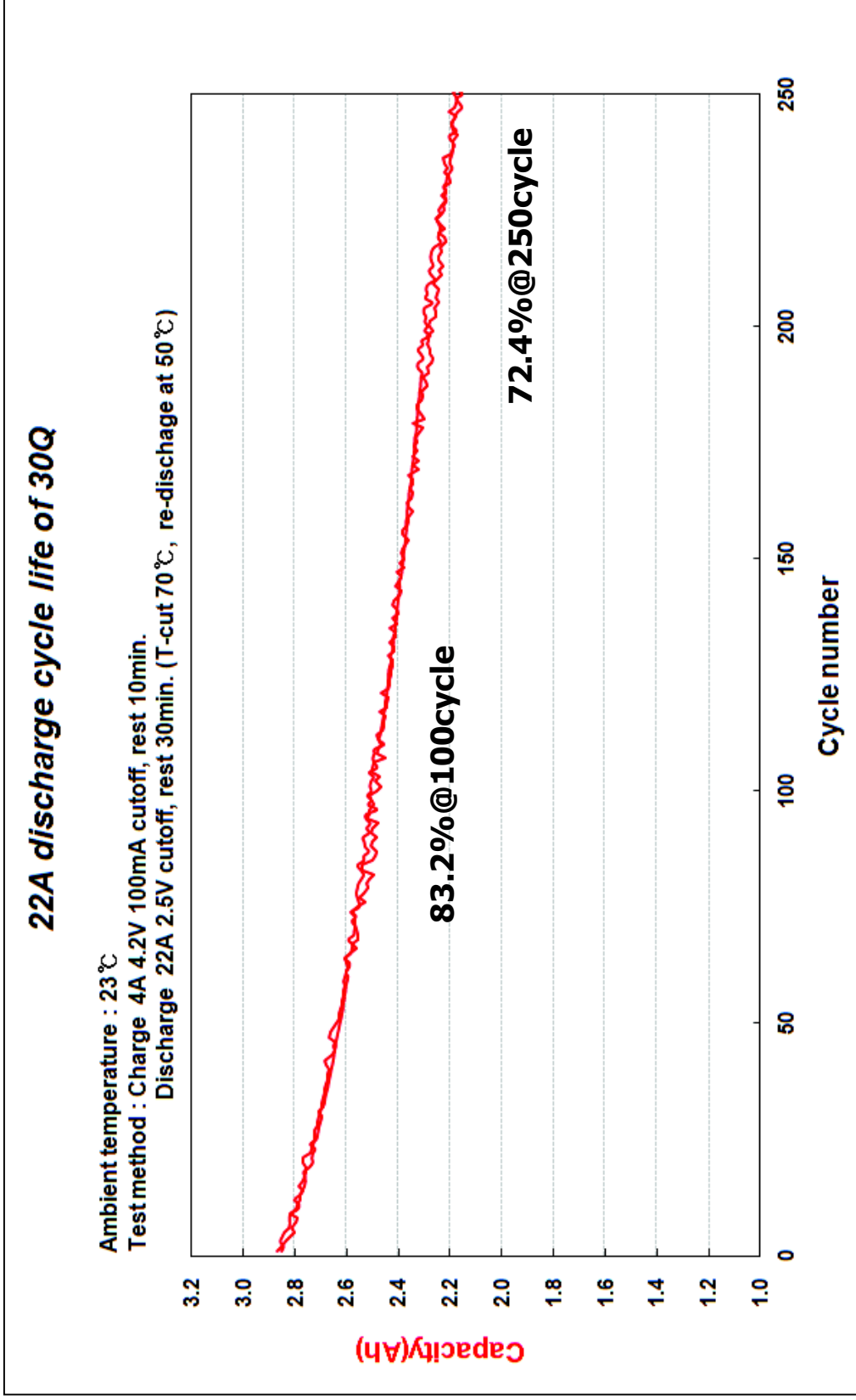
Cycle life _ 15A cycle

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Cycle life _ 22A cycle(70℃ T-cut)

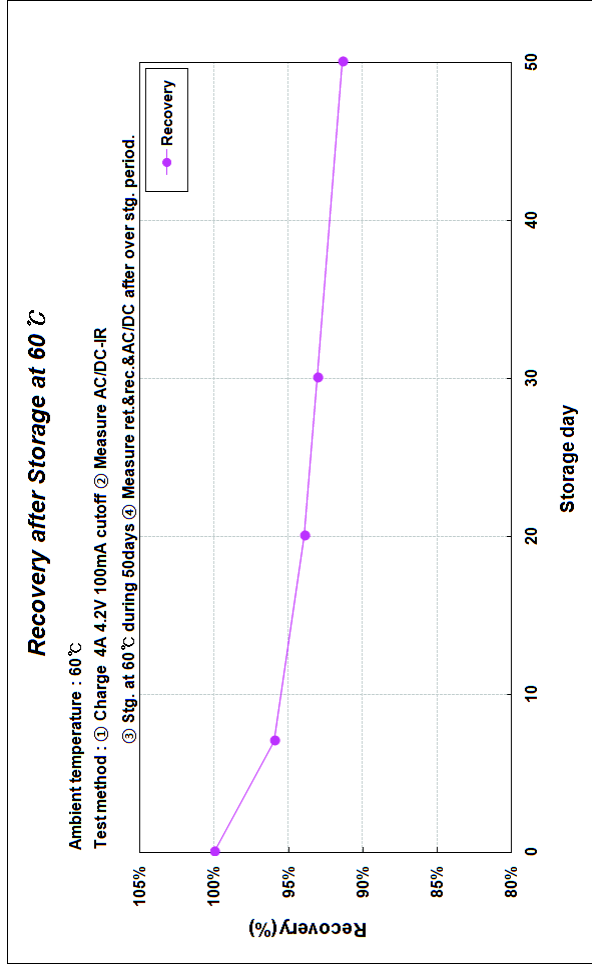
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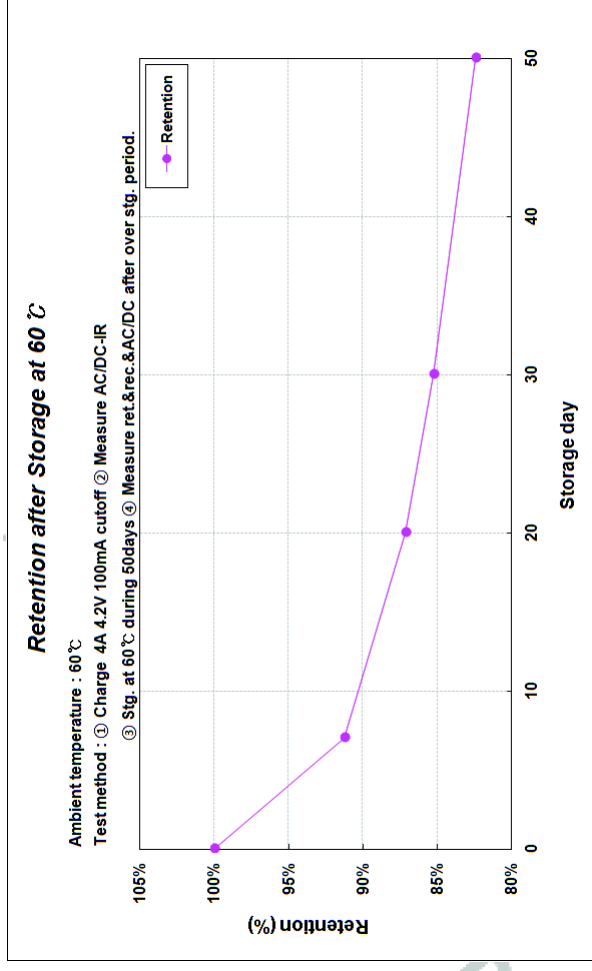
Storage at 60 °C

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■ Recovery



■ Retention



Storage at 60 °C

storage day	initial			after storage			Ratio(%)			
	ACIR	DCIR	Capacity	ACIR	DCIR	Retention	Recovery	ACIR	DCIR	Retention
7	13.2	20.0	2.981	14.2	27.0	2.720	2.862	7.2	35.1	91.3
20	13.2	19.9	2.986	15.1	31.9	2.604	2.807	14.7	60.5	87.2
30	13.1	20.2	2.990	16.1	34.7	2.550	2.783	23.2	72.0	85.3
50	13.1	19.9	2.986	16.4	38.4	2.463	2.730	25.8	93.3	82.5

10/17

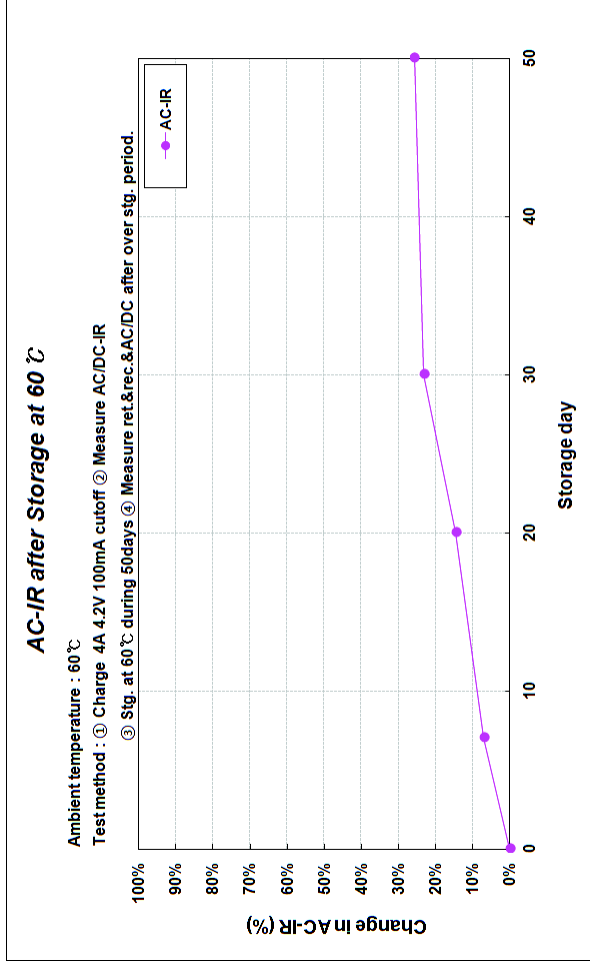
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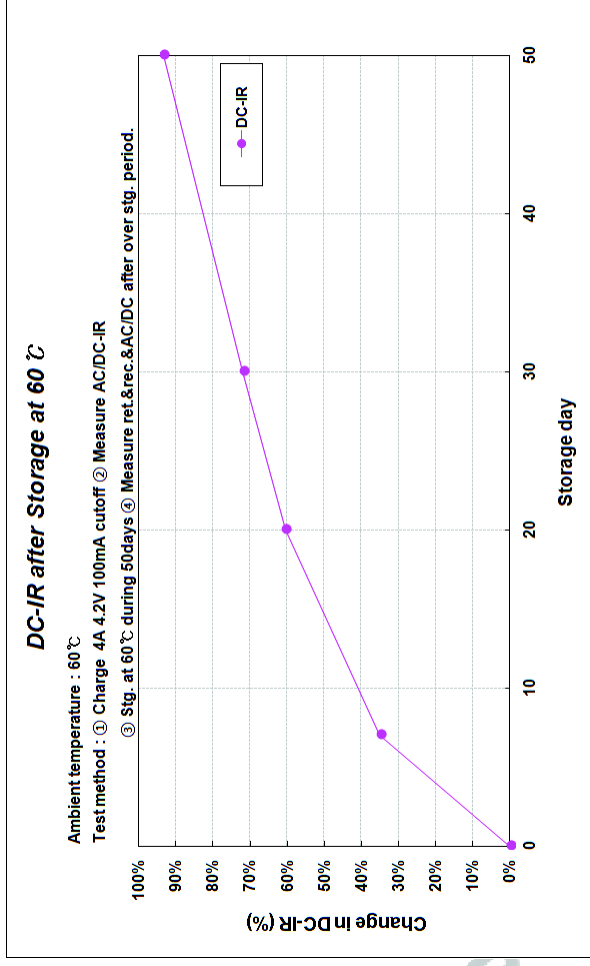
Storage at 60 °C

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■ AC-IR



■ DC-IR



Storage at 60 °C

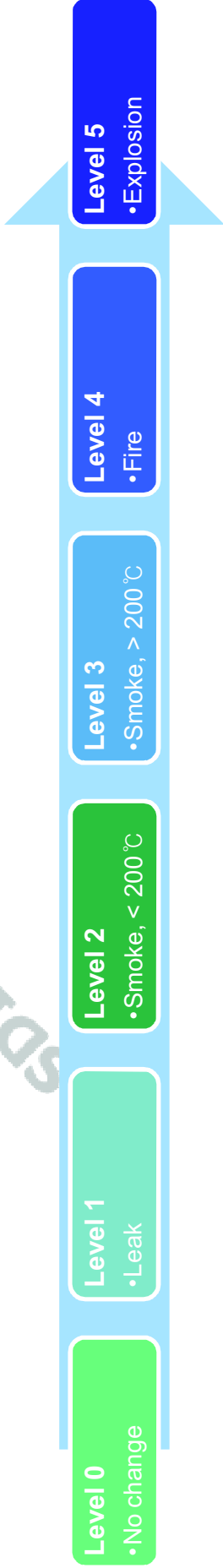
storage day	initial			after storage			Ratio(%)			
	ACIR	DCIR	Capacity	ACIR	DCIR	Retention	Recovery	ACIR	DCIR	Retention
7	13.2	20.0	2.981	14.2	27.0	2.720	2.862	7.2	35.1	91.3
20	13.2	19.9	2.986	15.1	31.9	2.604	2.807	14.7	60.5	87.2
30	13.1	20.2	2.990	16.1	34.7	2.550	2.783	23.2	72.0	85.3
50	13.1	19.9	2.986	16.4	38.4	2.463	2.730	25.8	93.3	82.5

11/17

Safety test _ Summary

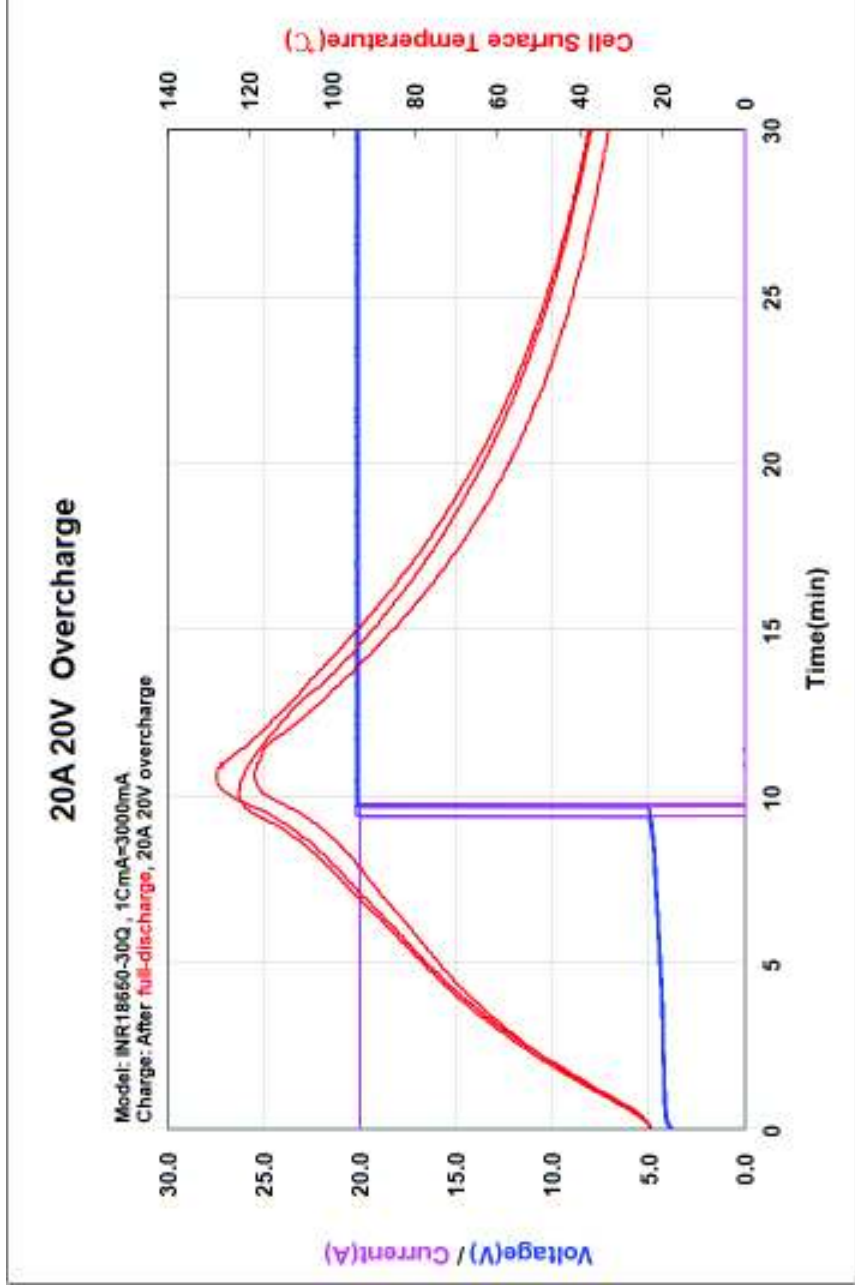
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			30Q	
Test item			Spec.	Results
				Max. temp.
				Results
Electrical Abuse	Overcharge	20A, 20V(UL)	L1	3L1 128.4
	Short circuit	10mΩ at 23 °C	L1	3L1 87.0
Mechanical Abuse	Impact	UL	L1	5L0 22.1
Thermal Abuse	Hot oven	140 °C	-	3L1 147.6



Safety test _ Overcharge

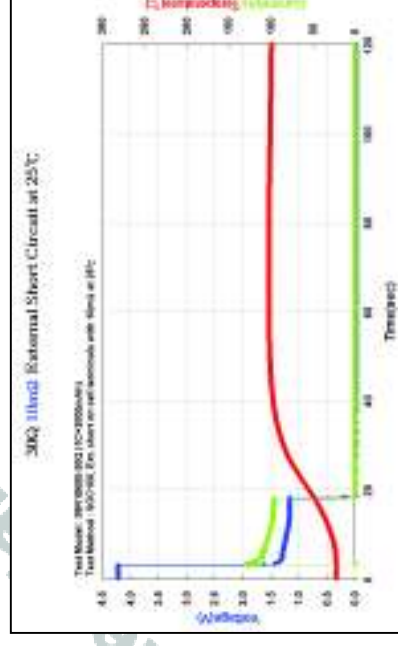
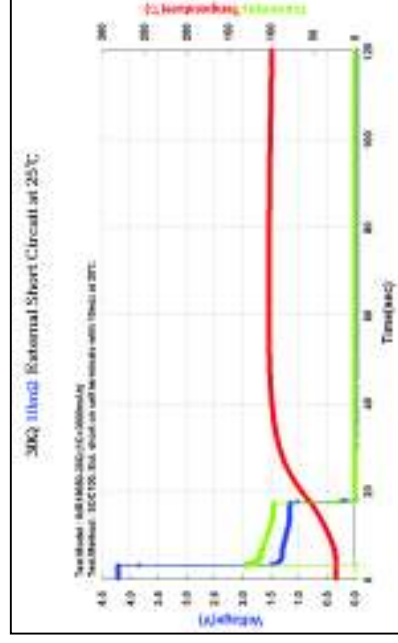
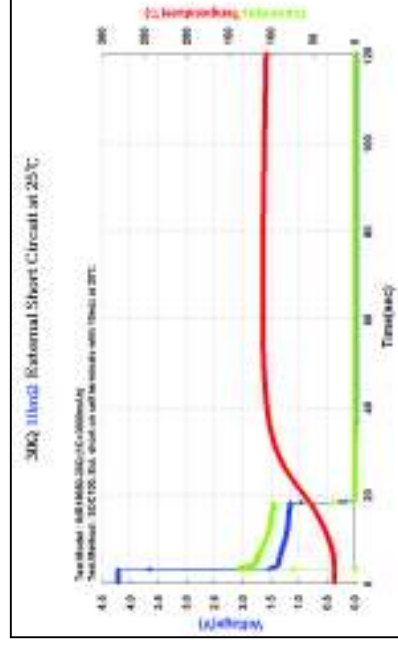
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Cell	Results	CID open time	Max. temp.
1	L1	9.76	119.0
2	L1	9.40	122.9
3	L1	9.70	128.4
Avg.		9.62	123.4

Safety test _ Short circuit

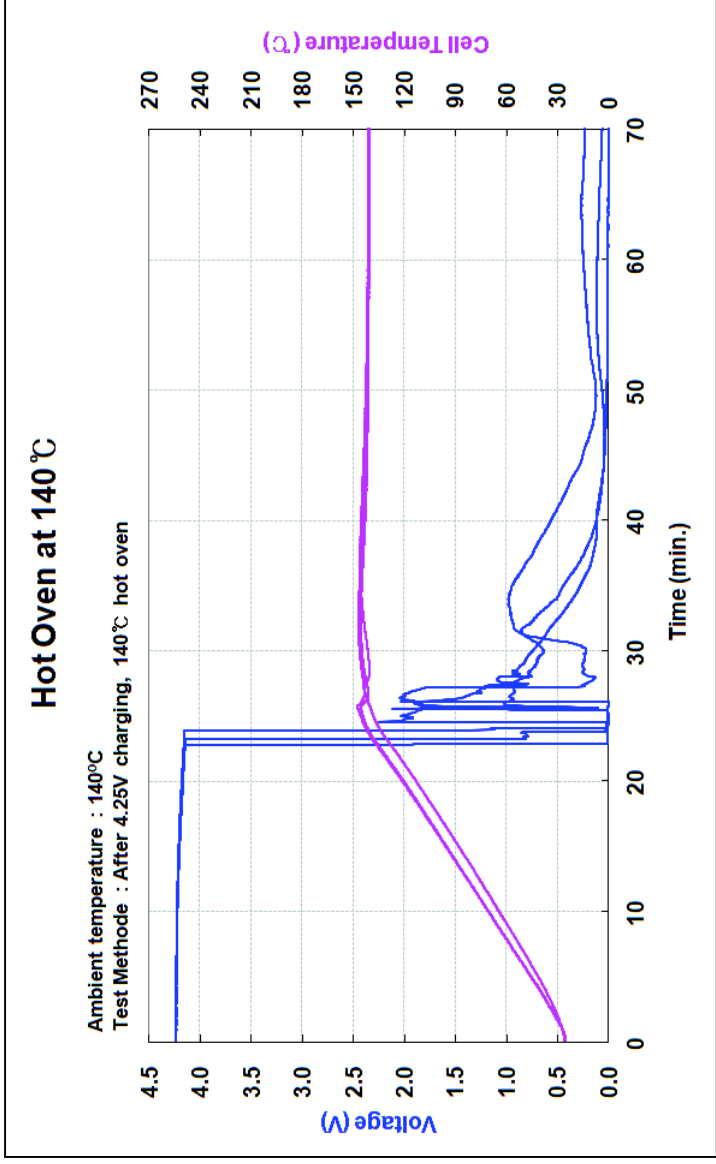
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Cell	Results	Max. current (A)	Max. temp.(°C)
1	L1	138	111
2	L1	132	104
3	L1	130	103
Avg.		133	106

Safety test _ Hot oven(140℃)

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Cell	Results	Max. temp.
1	L1 / OK	147.6
2	L1 / OK	145.9
3	L1 / OK	146.1
Avg.		146.5

Safety test _ Impact

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Cell	Results
1	L0 / OK
2	L0 / OK
3	L0 / OK
4	L0 / OK
5	L0 / OK

- Thank you -



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